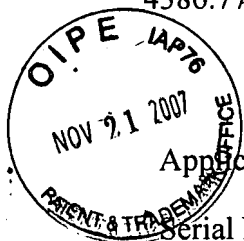


IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Kuramori et al.
Serial No.: 10/531,374
Conf. No.: 1233
Filed: April 15, 2005
For: TIRE WHEEL ASSEMBLY

Art Unit: 3617

Examiner: Kotter, Kip T.

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November 19, 2007

Date

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Commissioner for Patents
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TRANSMITTAL

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Enclosed please find the following:

(X) Appellant's Brief on Appeal Under 37 C.F.R. 41.37, including a check for \$500.00.

(X) If a Petition under 37 C.F.R. §1.136(a) for an extension of time for response is required to make the attached response timely and does not separately accompany this transmittal, Applicant(s) hereby petition(s) under 37 C.F.R. §1.136(a) for an extension of time for response in the above-identified application for the period required to make the attached response timely.

(X) The Commissioner is hereby authorized to charge any additional fees which may be required to this application under 37 C.F.R. §§1.16-1.17, or credit any overpayment, to Deposit Account No. 07-2069. Should no proper amount be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 07-2069. A duplicate copy of this sheet is enclosed.

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By:

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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

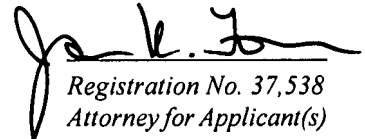
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November 19, 2007

Date


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APPELLANT'S BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

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PATENT APPLICATION

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APPELLANT'S BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

Mail Stop Appeal Brief - Patents
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This Appeal Brief is in support of Applicant's Notice of Appeal dated September 17, 2007, from the final rejection dated May 15, 2007 and the Advisory Action dated September 5, 2007.

APPEAL BRIEF

(i) REAL PARTY IN INTEREST

The real party in interest in this case is The Yokohama Rubber Co., Ltd., 36-11, Shimbashi 5-Chome, Minato-ku, Tokyo 105-8685, Japan. An Assignment of the Application to the real party of interest has been recorded on Reel 016872, Frame 0197, on April 15, 2005.

(ii) RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences that will directly affect, be directly affected by, or have a bearing on, the Board's decision in this pending appeal.

(iii) STATUS OF CLAIMS

This Application was originally filed with four (4) claims, numbered as Claims 1 - 4. During prosecution, Claims 2 - 4 were canceled without prejudice. Accordingly, only Claim 1 remains. Prior to filing the Notice of Appeal, Claim 1 was rejected and no claims were allowed. The rejection of Claim 1 is herein appealed. Claim 1 is an independent claim.

(iv) STATUS OF AMENDMENTS

Amendment B, filed on August 13, 2007, after the May 15, 2007 Final Office Action, was not entered, but the September 5, 2007 Advisory Action indicated that Amendment B would be entered for the purposes of Appeal. Accordingly, Amendment B should be entered with the filing of this Appeal. No additional amendments or responses have been filed after Amendment B.

(v) SUMMARY OF CLAIMED SUBJECT MATTER

The claim under appeal (Claim 1) is reproduced below, with bracketed insertions referring to the associated portions of the written description and drawings of the above-named application:

Claim 1. A tire wheel assembly [page 4, lines 9-11; Figure 1] in which a pneumatic tire [Page 4, lines 11-14; Figure 1, pneumatic tire 2] is fitted to a rim [Page 4, lines 11-14; Replacement Figure 1 (filed 3/27/2007), rim 1] of a wheel and a run-flat support [Page 4, lines 11-14; Figure 1, run-flat support 3] is inserted in a cavity section of the pneumatic tire [Figure 1, tire 2], the run-flat support [Figure 1, run-flat support 3] including an annular shell [Page 4, line 15; Figure 1, shell 4] and a pair of left and right elastic rings [Page 4, line 5; Figure 1, rings 5], the annular shell [Figure 1, shell 4] having a support surface projecting to the outer circumferential side [Page 4, lines 20-22; Figure 1, support surface 4a] and leg parts [Page 4, lines 22-23; Figure 1, leg parts 4b] extending along both sides of the support surface [Figure 1, support surface 4a], and the elastic rings [Figure 1, rings 5] supporting the leg parts [Figure 1, leg parts 4b] of the annular shell [Figure 1, shell 4] on the rim [Replacement Figure 1 (filed 3/27/2007), rim 1][Page 6, lines 3-5],

wherein a relation $(W2-W1)/W1 = 0.02$ to 0.100 is satisfied [Page 6, line 23, through Page 7, line 16] assuming that $W1$ [Figure 1] is an interval between abutting points where the pair of left and right elastic rings [Figure 1, rings 5] abut on the inner surface of the tire [Figure 1, tire 2] when the pneumatic tire and the run-flat support are mounted

[Figure 1, mounted tire 2 and mounted run-flat support 3] on the rim [Replacement Figure 1 (filed 3/27/2007), rim 1] and W2 [Figure 2] is an interval between the abutting points when the run-flat support [Figure 2, unmounted run-flat support 3] is not mounted;

wherein a JIS-A hardness of the elastic rings is 50 to 65 [Page 8, lines 1-12; Figure 1, rings 5]; and

wherein the annular shell [Figure 1, shell 4] is composed of metal with a yield strength of 400 MPa or more [Page 5, lines 9-18].

(vi) GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. Whether Claim 1 is unpatentable under 35 U.S.C. §103 over United States Patent No.6,463,974 to Hellweg et al. (hereinafter "Hellweg et al.") in view of United States Patent No. 4,823,854 to Payne et al. (hereinafter "Payne et al.") and United States Patent No. 7,100,654 to Boiocchi et al. (hereinafter "Boiocchi et al.").

(vii) ARGUMENT

I. THE REJECTION OF CLAIM 1 UNDER 35 U.S.C. §103 AS BEING UNPATENTABLE OVER HELLWEG ET AL. IN VIEW OF PAYNE ET AL. AND BOIOCCHI ET AL. SHOULD BE REVERSED

Applicants appeal the Examiner's rejection of Claim 1. As discussed below, the §103 rejection of Claim 1 over Hellweg et al. in view of Payne et al. and Boiocchi et al. is improper because: (A) the cited references fail to disclose or suggest a tire wheel assembly in which, *inter alia*, the claimed relationship $(W2-W1)/W1 = 0.02$ to 0.100 is satisfied; (B) the proposed combination also lacks the claimed annular shell that is composed of a metal with a yield strength of 400 MPa or more; and (C) the assembly problems solved by Hellweg et al. are not present in Payne et al. because Payne et al. is a "take-apart multi-piece" wheel rim (i.e., a segment type wheel rim), while the present invention and Hellweg et al. relate to a one-piece body structured rim.

A. The Cited References Fail To Disclose Or Suggest A Tire Wheel Assembly In Which, *Inter Alia*, The Claimed Relationship $(W2-W1)/W1 = 0.02$ to 0.100 Is Satisfied, Where W2 Is An Unmounted Width And W1 Is A Mounted Width.

Applicants respectfully submit that the cited references fail to disclose or suggest all of the claimed features of independent Claim 1. More specifically, the cited references fail to disclose or suggest a tire wheel assembly in which, *inter alia*, the relationship $(W2-W1)/W1 = 0.02$ to 0.100 is satisfied (assuming that W1 is an interval

between abutting points where the pair of left and right elastic rings abut on the inner surface of the tire when the pneumatic tire and the run-flat support are mounted on the rim and W2 is an interval between the abutting points when the run-flat support is not mounted). Applicants' Figures 1 and 2 show the locations of widths W1 and W2.

As correctly acknowledged by the Examiner, the Hellweg et al. reference fails to disclose or suggest the claimed relationship of $(W2-W1)/W1 = 0.02$ to 0.100 . *See* May 15, 2007 Final Office Action, page 3, lines 6-12. Accordingly, the Examiner relied upon the Payne et al. reference for this feature, wherein the Examiner asserted that column 13, lines 38-55 of Payne et al. disclose that $W1=6.96$ inches and $W2=7.08$ inches, resulting in $(W2-W1)/W1 = 0.0172$. *See* May 15, 2007 Final Office Action, page 3, lines 13-19. However, as set forth below, Applicants respectfully submit that the proposed combination still fails to include the claimed relationship because: (i) the structure of the run flat insert of Payne et al. is so different from the structure of run flat insert of Hellweg et al. that any relationship of unmounted and mounted widths from the Payne et al. device is irrelevant to the device of Hellweg et al.; (ii) the specific widths of Payne et al. asserted by the Examiner are not the same widths as the widths represented by W1 and W2 defined in independent Claim 1, but are instead measurements of the widths of a different interval; and (iii) the asserted relationship of $(W2-W1)/W1 = 0.0172$ fails to read on the claimed range of 0.02 to 0.100 .

- i. The structure of the run flat insert of Payne et al. is so different from the structure of the run flat insert of Hellweg et al. that any relationship of unmounted and mounted widths from the Payne et al. device is irrelevant to the device of Hellweg et al.

Assuming *arguendo* that the Payne et al. reference is analogous art with respect to Hellweg et al., and that one of ordinary skill in the art would have looked to Payne et al. to modify Hellweg et al., Applicants respectfully submit that the structure of the run flat insert 12 of Payne et al. is so different from the structure of the run flat insert 2 of Hellweg et al. that any relationship of widths from the Payne et al. device in which the numerator consists of the difference between the unmounted width and the mounted width and the denominator consists of the mounted width is irrelevant to the device of Hellweg et al.

More specifically, the device of Hellweg et al. includes a run flat insert 2 with a ring body 3 formed with two convex portions separated by a concave portion, as shown in cross-sectional Figure 1. Ring body 3 is connected to support elements 4 and 5, which are formed of a series of stacked layers of different elasticity. If tire 34 becomes flat, the radially interior surface of tire 34 is pressed against the radially exterior surface of the ring body 3.

In contrast, the device of Payne et al. includes a band 60 without the convex and concave portions similar to those in Hellweg et al. The flat radially outer surface of band 60 preferably supports a rubber tread portion 120, which tread portion abuts against the radially interior surface of tire 12, if tire 12 becomes flat. Further, band 60 of Payne et al. is preferably made of two semicircular components that are affixed together with fasteners 86/88, while the ring body 3 of Hellweg et al. is a single annular member. Finally, Payne et

al. lacks the support elements 4 and 5 found in Hellweg et al.

Thus, due to the structural differences between member 60 of Payne et al. and member 3 of Hellweg et al., especially considering the flat radially outer surface of Payne et al. compared to the undulating radially outer surface of Hellweg et al. and the lack of support elements 4 and 5 of Hellweg et al. in Payne et al., Applicants respectfully submit that it is improper to import the widths (mounted and un-mounted) from Payne et al. into the device of Hellweg et al. Further, there is no discussion in the references that the same materials were used, or that the materials had the same elasticity, or that the materials have the same thickness, all of which need to be considered when determining the appropriate relationship between the mounted and un-mounted widths. Accordingly, Applicants respectfully submit that the claimed relationship between W1 and W2 is not disclosed or suggested in the cited references. Therefore, for at least this reason, Applicants respectfully request the withdrawal of this rejection.

- ii. The specific widths of Payne et al. asserted by the Examiner are not the same as the claimed widths W1 and W2, but are instead measurements of the widths of a different interval

Applicants respectfully submit that the widths of 6.96 and 7.08 of Payne et al. asserted by the Examiner are not the same widths as the widths represented by W1 and W2 defined in independent Claim 1, but are instead measurements of the widths of a different interval. As shown in Applicants' Figures 1 and 2, and as recited in Claim 1, widths W1 and

W2 are measured between the abutting portions of the elastic rings (such as rings 5 of Applicants' Figure 1) when mounted (W1 of Figure 1) and when not mounted (W2 of Figure 2). In contrast, as shown in Figure 11 or Payne et al., the values of 6.96 and 7.08 of Payne et al. are the widths between the outer edges of shell 60, and not between the elastic rings (Payne et al. lacks elastic rings). Thus, because the intervals being measured in Payne et al. are different than those defined in Applicants Claim 1, Applicants respectfully submit that the claimed relationship of $(W2-W1)/W1 = 0.02$ to 0.100 defined in Claim 1 is not disclosed or suggested in Payne et al. Nor is it disclosed or suggested in any of the other cited references. Thus, for at least this reason also, Applicants respectfully request the withdrawal of this §103 rejection of independent Claim 1.

In response to the argument of the preceding paragraph, the Examiner argued that the Payne et al. reference is analogous art, and can be relied upon for the rejection. *See* May 15, 2007 Final Office Action, page 5, lines 1-6. Applicants respectfully submit that the Examiner appears to have misunderstood Applicants' argument, which was not a non-analogous art argument (which relates to an entire reference being of a different field of endeavor, *see* MPEP §2141.01(a)), but was instead that the widths taken from Payne et al. cannot be applied to Claim 1 because they are not measures of the same dimension defined in the claim. Applicants have not asserted that the Payne et al. reference was non-analogous art to the Hellweg et al. reference. Instead, Applicants asserted that the dimensions taken from Payne et al. measure a different interval than the interval defined in Claim 1.

In the Examiner's response on page 5 (lines 6-13) of the Final Office Action, the Examiner also asserted that the widths 6.96 and 7.08 of Payne et al. are analogous to widths W1 and W2 because both are intervals between two points that are each found on an abutting inner surface of the tire (mounted and un-mounted). However, as can be seen when comparing Figure 1 of Hellweg et al. with Figure 1 of Payne et al., insert 3 of Hellweg et al. does not reach the inner surfaces of the tire, while band 60 of Payne et al. does. Thus, assuming the same tire width, the insert 3 of Hellweg et al. will be of a smaller width than band 60 of Payne et al. The widths 6.96 and 7.08 of Payne et al. are widths of a resilient steel band in a stressed and a free state, respectively, and both widths are measures of the resilient steel. In contrast, measuring widths that extend beyond the edges of the resilient steel, to include support elements 4 of Hellweg et al., are not measurements of widths of resilient steel, but also include the addition of widths of portions of the support elements. There is no indication that the support elements will have the same elasticity as the steel band. Accordingly, the amount of resilience intended with the stressed and free state dimensions of the resilient steel band in Payne et al. may not be achieved when the same dimensions are applied to an interval that includes components other than the resilient steel, as in Hellweg et al., which includes support elements 4. Thus, for at least this reason also, Applicants respectfully request the withdrawal of this §103 rejection.

- iii. The asserted relationship of $(W2-W1)/W1 = 0.0172$ fails to read on the claimed range of 0.02 to 0.100

Even assuming *arguendo* that Applicants agreed that the Examiner's proposed combination was obvious, and that the asserted relationship of $(W2-W1)/W1 = 0.0172$ resulted because the intervals for W1 and W2 asserted by the Examiner were equivalent to the claimed intervals W1 and W2, such a combination still fails to read on the claimed relationship of Claim 1. This is the case because Claim 1 recites that $(W2-W1)/W1 = 0.02$ to 0.100, and the Examiner's asserted value of 0.0172 does not fall within the claimed range of 0.02 to 0.100. Further, the Boiocchi et al. reference does not disclose or suggest this feature either, nor was it relied upon by the Examiner for this feature. Accordingly for at least this reason also, Applicants respectfully request the withdrawal of this § 103 rejection of independent Claim 1.

The Examiner has argued that it would have been obvious to modify the dimensions provided by Payne et al. so that the result of the relationship $(W2-W1)/W1$ is within the claimed range of 0.02 to 0.100 because such modification is a mere design consideration. In other words, the Examiner's argument is that it would have been obvious to optimize the dimensions so that the result of the relationship $(W2-W1)/W1$ was within the claimed range.

In response, the Examiner is reminded that only result-effective variables can be optimized. See MPEP §2144.05(II)(B). As stated in MPEP §2144.05(II)(B), "A particular parameter must first be recognized as a result-effective variable, i.e., a variable

which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.” *See also In re Antonie*, 559 F.2d 618, 195 USPQ 6 (C.C.P.A. 1977).

The facts of In re Antonie, in which the court reversed a rejection based on the optimization (routine experimentation) rationale, can be analogized to the instant case. In In re Antonie, the court reversed a rejection for claims directed to a water treatment device where the rejection was based on the premise that it was obvious to optimize the ratio of the tank volume to a contactor area (which is the area of a set of rotating disks that contacts the liquid in the tank). Id. at 618-19, 195 USPQ at 7. The prior art disclosed that changing the contactor area could increase the efficiency of the device, but it did not disclose or suggest modifying the tank volume. Id. at 619, 195 USPQ at 8. More importantly, the prior art did not disclose or suggest that the ratio of the tank volume to the contactor area was related to the desired result of increasing efficiency, i.e., that the claimed ratio was known to be a result-effective variable. Id. at 620, 195 USPQ at 8-9.

Similarly, in the instant application, the relationship $(W2-W1)/W1$ is not disclosed as being a known result-effective variable. None of the cited references even mentions this relationship. Thus, since the cited references do not disclose or suggest the presently claimed relationship of $(W2-W1)/W1$, the cited references also fail to utilize the particular claimed relationship to obtain the desired result of a range within 0.02 and 0.100. Accordingly, for this reason also, Applicants respectfully request the withdrawal of this

rejection because the cited references fail to disclose or suggest all of the features of the claimed invention as defined in independent Claim 1.

B. The Proposed Combination Also Lacks The Claimed Annular Shell That Is Composed Of A Metal With A Yield Strength Of 400 MPa Or More

Applicants also respectfully submit that the §103 rejection should be withdrawn because the proposed combination also lacks the claimed annular shell that is composed of a metal with a yield strength of 400 MPa or more, as defined in independent Claim 1. As correctly acknowledged by the Examiner, the Hellweg et al. reference and the Payne et al. reference both fail to disclose or suggest this feature. Accordingly, the Examiner relied upon the Boiocchi et al. reference for this feature.

However, Applicants respectfully submit that the annular body 5 of Boiocchi et al. is not equivalent to the annular shell 3 of Hellweg et al., nor is it equivalent to the annular shell of the present invention. Accordingly, one of ordinary skill in the art would not have modified the shell 3 of Hellweg et al. based on annular body 5 of Boiocchi et al. More specifically, annular body member 5 of Boiocchi et al. is a toroid- or doughnut-shaped member formed by outer surface 7, inner surface 8 and side surfaces 9 and 10. Body member 5 encloses a filler 6 that is made of an expanded material. In contrast, annular shell 3 of Hellweg et al. is not doughnut- or toroid-shaped, but is instead merely a ring-shaped body with no inner surface. Further, annular shell 3 of Hellweg et al. lacks the filler 6 of Boiocchi et al. Accordingly, since the structural and operational features of body member 5 of

Boiocchi et al. are different from those of shell 3 of Hellweg et al., Applicants respectfully submit that one of ordinary skill in the art would not have used a feature of body member 5 of Boiocchi et al. (its material and yield strength) to modify shell 3 of Hellweg et al. Thus, for this reason also, Applicants respectfully request the withdrawal of this §103 rejection of independent Claim 1.

In response to the argument of the preceding paragraph, the Examiner argued that the Payne et al. reference is analogous art, and can be relied upon for the rejection. *See* May 15, 2007 Final Office Action, page 6, lines 5-15. Applicants respectfully submit that the Examiner appears to have misunderstood Applicants' argument in this instance also, which was not a non-analogous art argument (which relates to an entire reference being of a different field of endeavor, *see* MPEP §2141.01(a)), but was instead that because the structures of Boiocchi et al. and Hellweg et al. are operationally and structurally different, such as being shaped differently and including/lacking filler, a suitable material and the required yield strength for body 5 of Boiocchi et al. is not necessarily a suitable material with the appropriate yield strength for shell 3 of Hellweg et al. Accordingly, for this reason also, Applicants respectfully request the withdrawal of this §103 rejection of Claim 1.

C. The Assembly Problems Solved By Hellweg Et Al. Are Not Present In Payne Et Al. Because Payne Et Al. Is A “Take-Apart Multi-Piece” Wheel Rim (I.E., A Segment Type Wheel Rim), While The Present Invention And Hellweg Et Al. Relate To A One-Piece Body Structured Rim

Applicants also respectfully submit that the § 103 rejection should also be withdrawn because the assembly problems solved by Hellweg et al. are not present in Payne et al. because Payne et al. is a “take-apart multi-piece” wheel rim (i.e., a segment type wheel rim), while the present invention and Hellweg et al. relate to a one-piece body structured rim. More specifically, the safety insert in Payne et al. (which corresponds to the annular shell of the present invention) is mounted onto the take-apart multi-piece wheel rim. Since Payne et al. appears to make assembly work of the safety insert easier by segmenting the wheel rim, Payne et al. fails to contain the concept of overcoming the difficulty of assembling an annular shell with a rim of a one-piece body structure as found in Hellweg et al. and/or the present invention. Accordingly, it technically makes no sense to apply the distance (interval) between the knees 68 and 70 in Payne et al. to the constitution of the run flat insert of Hellweg et al., because there is not motivation to do so.

In contrast to the above, according to the present invention, assembling together a rim of a one-piece body structure and an annular shell in a circumferentially one-piece body structure can be facilitated. Moreover, the rim-shell assembling operation is facilitated as above for the first time when all three of the following requirements are satisfied: (1) the relation $(W2-W1)/S1=0.02$ to 0.10 is satisfied; (2) the JIS-A hardness of the

elastic rings is 50 to 60; and (3) the annular shell is composed of metal with a yield strength of 400 MPa or more. Furthermore, as the elastic rings are firmly seated in a place where the elastic rings 5 and 5 abut on the inner surface of the tire based on its own restoring force, the durability in run-flat driving can be enhanced (paragraph [0022] of the current specification).

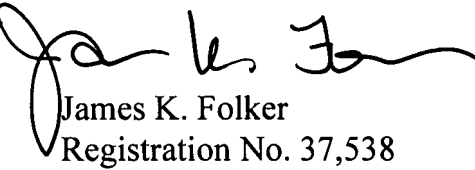
Accordingly, for this reason also, Applicants respectfully request the withdrawal of this § 103 rejection.

II. CONCLUSION

For all of the above reasons, Applicants respectfully request that the Board reverse the rejection of Claim 1 as being unpatentable under 35 U.S.C. §103 over Hellweg et al. in view of Payne et al. and Boiocchi et al.

Respectfully submitted,

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(viii) CLAIMS APPENDIX

The following claim (Claim 1) is involved in this appeal:

1. (Previously Presented) A tire wheel assembly in which a pneumatic tire is fitted to a rim of a wheel and a run-flat support is inserted in a cavity section of the pneumatic tire, the run-flat support including an annular shell and a pair of left and right elastic rings, the annular shell having a support surface projecting to the outer circumferential side and leg parts extending along both sides of the support surface, and the elastic rings supporting the leg parts of the annular shell on the rim,

wherein a relation $(W2-W1)/W1 = 0.02 \text{ to } 0.100$ is satisfied assuming that $W1$ is an interval between abutting points where the pair of left and right elastic rings abut on the inner surface of the tire when the pneumatic tire and the run-flat support are mounted on the rim and $W2$ is an interval between the abutting points when the run-flat support is not mounted;

wherein a JIS-A hardness of the elastic rings is 50 to 65; and

wherein the annular shell is composed of metal with a yield strength of 400 MPa or more.

(ix) EVIDENCE APPENDIX

No evidence is submitted by Appellants pursuant to 37 C.F.R. §§1.130, 1.131 or 1.132, or entered by the Examiner and relied upon by Appellants in this appeal.

(x) RELATED PROCEEDINGS APPENDIX

There are no related decisions rendered by a court or the Board in any proceeding pursuant to 37 C.F.R. §41.37(c)(1)(ii).